In the claims:

1. (Original) A method of synthesizing a block copolymer, said method comprising the steps of:

(a) providing a first compound comprising a polymeric thiol precursor;

(b) generating a polymeric thiol from said first compound; and

(c) initiating a polymerization of a second compound comprising an episulfide group with said thiol produced in step (b) thereby producing a block copolymer comprising a terminal thiol.

2. (Original) The method of claim 1, said method further comprising step (d) end-capping the product of step (c) with a third compound that comprises a group that is reactive to thiols thereby producing a block copolymer comprising at least three blocks.

3. (Original) The method of claim 1, said method further comprising step (d) using said terminal thiol from the product of step (c) in a second polymerization step.

4. (Original) The method of claim 1 or claim 2, wherein said first compound further comprises a hydrophilic polymer.

5. (Previously presented) The method of claim 4, wherein said hydrophilic polymer is selected from the group consisting of poly(ethylene glycol), poly(ethylene oxide), poly(ethylene oxide)-co-poly(propylene oxide), poly(N-vinyl pyrrolidone), poly(ethyloxazoline), poly(acrylic acid), poly(ethylene-co-vinyl alcohol), poly(acrylamide), poly(N-alkyl or N,N-dialkylacrylamides), poly(acrylates), poly(peptides), and poly(saccharides).

6. (Original) The method of claim 5, wherein said hydrophilic polymer further comprises polar, ionic, or ionizable groups.

7. (Original) The method of claim 1 or claim 2, wherein said first compound further comprises polyether or a block copolymer, wherein at least one block comprises polyether.

8. (Original) The method of claim 7, wherein said polyether comprises a molecular weight of > 300 Da and a terminal, electron-poor double bond.

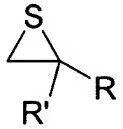
9. (Original) The method of claim 7, wherein said polyether is poly(ethylene glycol).

10. (Withdrawn) The method of claim 1 or claim 2, wherein said first compound further comprises a peptidic sequence or a saccharidic sequence.

11. (Currently amended) The method of claim 1 or claim 2, wherein said polymeric thiol precursor is selected from the group consisting ~~comsisting~~ of a thioester, a dithioester, a thiocarbamate, a dithiocarbamate, a thiocarbonate, a xanthate ~~xantate~~, and a trithiocarbonate.

12. (Original) The method of claim 1 or claim 2, wherein said first compound comprises a linear, star-shaped, or branched polymer with a thiol precursor at each end.

13. (Original) The method of claim 1 or claim 2, wherein said episulfide in step (c) comprises



where R or R' comprises hydrogen, alkyl, hydroxyalkyl, alkoxyalkyl, phenyl, substituted phenyl, acyl, or carboxyalkyl.

14. (Original) The method of claim 2, wherein said third compound comprises polyether or a block copolymer, wherein at least one block comprises polyether and a Michael acceptor group or a leaving group capable of being displaced by a nucleophilic sulfur atom.

15. (Original) The method of claim 14, wherein said polyether comprises poly(ethylene glycol).

16. (Original) The method of claim 14, wherein said Michael acceptor is selected from the group consisting of acrylate, itaconate, acrylamide, itaconamide, maleimide, vinyl sulfone, quinone, multi-substituted quinone, fused quinone, vinyl pyridine, and vinyl pyridinium ion.

17. (Original) The method of claim 14, wherein said leaving group is selected from the group consisting of chloride, bromide, iodide, tosylate, mesylate, bromoacetate, iodoacetate, substituted and unsubstituted benzyl bromide, bromoacetamide, iodoacetamide, and triflate.

18. (Original) The method of claim 2, wherein said third compound comprises a compound having a low molecular weight and a group with Michael-type reactivity or a group capable of undergoing nucleophilic substitution.

19. (Original) The method of claim 18, wherein said third compound further comprises a functional group selected from the group consisting of peptide, ester, anhydride, and Schiff base, and acetal.

20. (Original) The method of claim 2, wherein said third compound further comprises a block copolymer comprising a group that undergoes hydrolytic degradation.

21. (Original) The method of claim 20, wherein said group is selected from the group consisting of aliphatic ester, anhydride, Schiff base, and acetal.

22. (Original) The method of claim 2, wherein said third compound is the product of step (c).

23. (Original) The method of claim 1 or claim 2, wherein said second compound comprises a compound selected from the group consisting of propylene sulfide, cyclohexene episulfide, and ethylene sulfide.

24. (Original) The method of claim 1 or claim 2, wherein the step (c) further comprises adding a fourth compound comprising an episulfide group.

25. (Original) The method of claim 24, wherein said third compound is added simultaneously with said second compound to produce a random copolysulfide.

26. (Original) The method of claim 24, wherein said third compound is added sequentially before or after said second compound to produce a block copolysulfide.

27. (Original) The method of claim 1 or claim 2, wherein the conversion of the thiol precursor to a thiolate in step (b) comprises a transesterification or transamidation reaction.

28. (Original) The method of claim 2, wherein said third compound is thiirane.

29. (Withdrawn) The method of claim 2, wherein said third compound further comprises a peptidic sequence or a saccharidic sequence.

30. (Withdrawn) The method of claims 10 or 29, wherein said peptidic or sacchardic sequence comprises a peptide or a saccharide that binds to an adhesion-promoting receptor.

31. (Withdrawn) The method of claim 30, wherein said peptidic sequence comprises RGD or YIGSR.

32. (Withdrawn) The method of claim 10 or 29, wherein said peptidic sequence comprises a proteolytically degradable sequence.

33. (Withdrawn) The method of claim 32, wherein said proteolytically degradable sequence comprises a substrate for a protease selected from the group consisting of plasmin, elastase, collagenase, and a matrix metalloproteinase.

34. (Original) The method of claim 2, wherein said third compound comprises a polymeric backbone identical in chemical nature to said first polymer.

35. – 61. (Cancelled)

62. (Original) The method of claim 2, further comprising a step (e) reacting a fourth compound with a terminal thiol of the product of step (d).